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CLAIMS

1. A switch card, comprising:
a plurality of switching elements, wherein the plurality of switching elements are
5 arranged to form a switch configuration; and

N number of payload interfaces, wherein each of the N number of payload
interfaces is coupled to interface with one of a plurality of payload slots, wherein the N
number of payload interfaces are coupled to the switch configuration such that a latency
function is minimized for the switch configuration and a set of N payload module
10 configurations, and wherein the set of N payload module configurations is characterized
by a sequential addition of a payload module into each of the plurality of payload slots.

2. The switch card of claim 1, wherein the latency function is a root-mean squared
latency function.

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3. The switch card of claim 1, wherein the latency function is an arithmetic mean
latency function.

4. The switch card of claim 1, wherein the latency function is a normalized root-
20 mean squared latency function.

5. The switch card of claim 1, wherein the latency function is a normalized
arithmetic mean latency function.

25 6. The switch card of claim 1, wherein the sequential addition comprises a first
end to a second end sequential addition.

7. The switch card of claim 1, wherein the sequential addition comprises a second
end to a first end sequential addition.

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8. The switch card of claim 1, wherein the plurality of switching elements
comprises M number of switching elements coupled to the N number of payload
interfaces, wherein each of the M number of switching elements has a plurality of ports,

and wherein the sequential addition comprises populating all of the plurality of ports on one of the M number of switching elements, one of the M number of switching elements at a time.

5 9. A network, comprising:

a switch card having a plurality of switching elements, wherein the plurality of switching elements are arranged to form a switch configuration;

N number of payload interfaces coupled to the switch configuration, wherein each of the N number of payload interfaces is coupled to interface with one of a plurality of
10 payload slots; and

a set of N payload module configurations, wherein the set of N payload module configurations is characterized by a sequential addition of a payload module into each of the plurality of payload slots, wherein the sequential addition of the payload module couples the payload module to the network, and wherein the N number of payload
15 interfaces are coupled to the switch configuration such that a latency function is minimized for the switch configuration and the set of N payload module configurations.

20 10. The network of claim 9, wherein the latency function is a root-mean squared latency function.

21 11. The network of claim 9, wherein the latency function is an arithmetic mean latency function.

25 12. The network of claim 9, wherein the latency function is a normalized root-mean squared latency function.

 13. The network of claim 9, wherein the latency function is a normalized arithmetic mean latency function.

30 14. The network of claim 9, wherein the sequential addition comprises a first end to a second end sequential addition.

15. The network of claim 9, wherein the sequential addition comprises a second end to a first end sequential addition.

16. The network of claim 9, wherein the plurality of switching elements comprises
5 M number of switching elements coupled to the N number of payload interfaces, wherein each of the M number of switching elements has a plurality of ports, and wherein the sequential addition comprises populating all of the plurality of ports on one of the M number of switching elements, one of the M number of switching elements at a time.

10 17. A switch card, comprising:
a plurality of switching elements, wherein the plurality of switching elements are arranged to form a switch configuration; and
N number of payload interfaces, wherein each of the N number of payload
interfaces is coupled to interface with one of a plurality of payload slots, wherein the N
15 number of payload interfaces are coupled to the switch configuration so as to minimize an all-to-all transfer time based on minimizing a latency function for the switch configuration and a set of N payload module configurations, and wherein the set of N payload module configurations is characterized by a sequential addition of a payload module into each of the plurality of payload slots.

20 18. The switch card of claim 17, wherein the latency function is a root-mean squared latency function.

25 19. The switch card of claim 17, wherein the latency function is an arithmetic mean latency function.

20. The switch card of claim 17, wherein the latency function is a normalized root-mean squared latency function.

30 21. The switch card of claim 17, wherein the latency function is a normalized arithmetic mean latency function.

22. The switch card of claim 17, wherein the sequential addition comprises a first end to a second end sequential addition.

5 23. The switch card of claim 17, wherein the sequential addition comprises a second end to a first end sequential addition.

24. The switch card of claim 17, wherein the plurality of switching elements comprises M number of switching elements coupled to the N number of payload
interfaces, wherein each of the M number of switching elements has a plurality of ports,
10 and wherein the sequential addition comprises populating all of the plurality of ports on one of the M number of switching elements, one of the M number of switching elements at a time.